

Logarithmic Functions

refer to as a "log"

log form

exponential form

$$X = \log_b y \iff b^x = y$$

↑
"base b"

* base of the log becomes the base of the exponent

* exponent is what is on the other side of the equal sign.

Example :

$$\log_2 8 = 3$$

$$2^3 = 8$$

$$\log_4 1 = 0$$

$$4^0 = 1$$

$$\log_{12} 12 = 1$$

$$12^1 = 12$$

Evaluate :

$$\log_4 64 = x$$

$$4^x = 64$$

4 to what power is 64?

$$x = 3$$

$$\log_5 \left(\frac{1}{5} \right) = x$$

$$5^x = \frac{1}{5}$$

5 to what power is $\frac{1}{5}$

$$5^{-1} = \frac{1}{5^1} = \frac{1}{5}$$

$$x = -1$$

Evaluate
 $\log_{1/5} 125 = x$

$$\left(\frac{1}{5}\right)^x = 125$$

$$x = -3$$

*Note: if you go
from fraction to
whole # or vice
versa, your x is probably negative.

$$\left(\frac{1}{5}\right)^{-3} = 5^3 = 125$$

$$\log_{36} 6 = x$$

(p 503 # 8-19)

$$36^x = 6$$

* Note: they won't
do more than
 $\frac{1}{2}$ or $\frac{1}{3}$

$$x = \frac{1}{2}$$

↑
square root!

Get it • 1, 2, 3, 6 • No!

